

This listing of claims will **replace** the claims that were published in the PCT Application

Listing and Amendments to the Claims

Claims 1-52 and 54 are cancelled:

53.(currently amended) A digital representation of an analog signal,
the digital representation being ~~characterized in that~~ wherein:

the digital representation includes a representation of a copy detection signal that is sensitive to transformations produced by digital-to-analog and analog-to-digital conversions, whereby the representation of the copy detection signal may be used to determine whether another digital representation of the analog signal was made by digitizing an analog signal produced from the digital representation.

55. (new). A method of creating a digital authentication pattern that contains a message, the digital authentication pattern belonging to a digital representation and the method comprising:

selecting sets of pattern elements belonging to the digital authentication pattern to carry message elements of the message; and

for each selected set, setting the values of the pattern elements in the set to carry the message element such that the digital authentication pattern's ability to detect copying remains substantially unchanged.

56. (new). The method according to claim 55, further comprising setting the values such that the entropy of the digital authentication pattern is substantially unchanged.

57. (new) The method according to claim 55, wherein the message elements specify values belonging to a range thereof; and a selected set of pattern elements is set to indicate a message element specifying one of the values of the range, in said setting act.

58. (new). The method according to claim 57 wherein the selected set is set using a key, in said setting act.

59. (new) The method according to claim 57 wherein the sets of pattern elements belong to categories thereof, the category of a set of pattern elements indicates the value of a message element contained therein, and the set of pattern elements is given a category as required for the value of the message element, in said setting act.

60 (new). The method according to claim 59 wherein the sets of pattern elements belong to two categories.

61 (new). The method according to claim 59, wherein the values of the pattern elements in the set are inverted to indicate a value belonging to a category, in said setting act.

62. (new) The method according to claim 55, wherein the message is encoded using a key.

63. (new) The method according to claim 55, wherein in said selecting act, a key is used to select the set of pattern elements that an element of the message is inserted into.

64. (new) The method according to claim 55 wherein the pattern element is a primitive element of the digital representation to which the digital authentication pattern belongs.

65. (new) A storage device wherein that:

the storage device contains code which, when executed by a processor, implements the method according to claim 55.

66. (new) A digital authentication pattern that contains a message, the digital authentication pattern comprising:

a plurality of sets of pattern elements, the plurality of sets of pattern elements including sets thereof that carry message elements belonging to the message; and

in a set that carries a message element, the set's values are set such that the digital authentication pattern's ability to detect copying remain substantially unchanged.

67. (new) The digital authentication pattern according to claim 66, wherein:

the values are set such that an entropy of the digital authentication pattern is substantially unchanged.

68 (new) The digital authentication pattern according to claim 66, wherein:
the message elements specify values belonging to a range thereof; and
in a set that carries message elements, the set's values are set to indicate a message element specifying one of the values of the range.

69. (new) The digital authentication pattern according to claim 68 wherein:
the sets of pattern elements belong to categories thereof;
the category of a set of pattern elements indicates the value of a message element contained therein; and
in a set that carries message elements, the set has a category as required for the value of the message element.

70. (new) The digital authentication pattern according to claim 66, wherein:
the pattern element is a primitive element of the digital representation to which the digital authentication pattern belongs.

71. (new) The digital authentication pattern according to claim 70, wherein:
the pattern element is a pixel.

72.(new) The digital authentication pattern according to claim 70, wherein:
the digital representation is a representation of an audio signal and the pattern element is a primitive of the representation of the audio signal.

73.(new) The digital authentication pattern according to claim 70, wherein:
the digital representation is a representation of a video signal and the pattern element is a primitive of the representation of the video signal.

74 (new) A storage device wherein that:
the storage device contains the digital authentication pattern according to claim 66.

75. (new) A method of reading a message contained in a digital authentication pattern that includes a plurality of sets of pattern elements, the method comprising:

selecting sets of the pattern elements from the plurality, said selected sets carrying message elements of the message and the values of said selected set's pattern elements being set such that the digital authentication pattern's ability to detect copying remains substantially unchanged ; and

for each selected set, comparing the selected set with equivalent sets that have a possible value of the message element to determine a value of the message element in the selected set.

76. (new) The method according to claim 75 further comprising after the message has been read, creating an equivalent digital authentication pattern to the digital authentication pattern that contains the message, whereby the digital authentication pattern that contains the message is comparable with the equivalent digital authentication pattern to determine a copying relationship with regard to a digital representation that contains the digital authentication pattern that contains the message.

77. (new) The method according to claim 76 wherein in said creating act, the equivalent digital authentication pattern is created by replacing sets of pattern elements therein that do not carry message elements with equivalent sets of pattern elements that do carry message elements.

78. (new) The method according to claim 75, wherein the message elements specify values belonging to a range thereof; and the equivalent sets of pattern elements include a set for each of the values in the range thereof.

79 (new) The method according to claim 75 wherein the selection is done using a key, in said selecting act.

80. (new) The method according to claim 78 wherein the sets of pattern elements belong to categories thereof; the category of a set of pattern elements indicates the value of a message element contained therein and the equivalent sets include a set for each of the categories, in said comparing act.

81.(new) The method according to claim 80, wherein the sets of pattern elements belong to two categories.

82. (new) The method according to claim 80, wherein a set of pattern elements whose original values have been inverted indicates a message element value corresponding to the category of the set of pattern elements, in said comparing act.

83.(new) The method according to claim 75, wherein a message element is repeated in the sets of pattern elements and further comprising comparing sets of pattern elements containing the repeated message element to statistically determine a value of the repeated message element.

84.(new) A storage device wherein that:

the storage device contains code which, when executed by a processor, implements the method according to claim 75.